

ATTACHMENT # 1 SPECIFICATIONS

GENERAL DESCRIPTION OF THE PROJECT

The following are the main characteristics of the works to be executed at the Colombian National Police Hangar 2, located at Guaymaral, Cundinamarca.

The works include, but are not limited to, the enlargement of an existing mezzanine facility inside the Colombian National Police Hangar at Guaymaral. This includes the construction of a mezzanine inside the hangar in concrete and metallic structure, as well as the installation of walls, floors, windows, access doors and finishes for the new enlarged facility to be built. The works also include the execution of the electrical and structured wiring works for the new offices and shops.

It is understood that the Contractor shall verify the measures and become familiar with the terrain and the existing conditions before sending his quotation. In this statement of work, guide measures are given for the Contractor to check the drawings and the construction quantities chart and to check the physical conditions on site. In no way do these figures commit the Embassy to pay additional quantities if the resulting measures on site vary from the information given by the US Embassy.

For the structural, metallic, finishing, electrical installations and structured wiring, the Contractor shall supply a maintenance and inspection manual for routine activities, with recommendations for inspection and maintenance after storms of severe load conditions.

DETAILED DESCRIPTION OF THE PROJECT

1) PRELIMINAR ACTIVITIES

The Contractor shall make the applicable verifications in order to certify the designs given to them to be adequate for this installation and shall guarantee the correct execution of the works, fulfilling the standards of the applicable codes before the start of the construction process.

All works are to be constructed pursuant to the NEC, ACODAL, ICONTEC, EIA, AISC and NSR-10 and each shall be applied according to the necessity. The Contractor shall guarantee that the project fulfill all the rules of the Ministerio del Medio Ambiente and the Departamento Administrativo de la Aeronáutica Civil.

1.01) Provisional installations

Before starting installation, the Contractor shall submit a drawing with location of the camp, fencing of the construction site and temporary services (water, energy, telephone, etc.), for the approval of the US Government Representative. All the installations shall be removed by the Contractor with the approval of the US Government Representative when the works are finished. The site shall be left as it was found before the start of the construction, with grass, sidewalks, etc. This removal, along with the installation, shall be quoted at a global price and shall be included in the total cost of the project.

Provisional services: the eventual supply of any service by the final user to the Contractor shall not be a conditioned help and its eventual suspension shall not give place to any claim by the Contractor. The Contractor shall provide alternative services for these situations.

1.02) Security of the construction site

The Contractor shall supply security for the construction site and the camps. The US Government and the final user shall not be responsible for the payment of the security services nor for the elements left at the construction site.

1.03) Provisional fencing

The work site shall be completely isolated from zones or roads surrounding the same. Similarly, if a materials storage area is built, this shall be fenced off in the same manner. The Contractor shall build a fence for this purpose, consisting of synthetic canvas with wooden posts every two meters, kept taut by means of wires at the top, middle and bottom. The Contractor shall fit props at either side of the access door or whenever there is a change of direction. This fence shall have one access point only, a double door through which machinery, vehicles and personnel shall enter. While the works are in progress, the Contractor shall ensure that the fence is maintained and repaired, so that it is always in suitable condition.

1.04) Location and layout

The Contractor shall use precision topographical instruments following architectural and structural distribution. The Contractor shall draw up the ground plan for each of the elements to be constructed. The area to be constructed is that which is indicated in the plans, plus the extra widths and the utilities connections. This work shall be done by a qualified professional, who shall determine the levels in addition to the ground plan. Everything shall be benchmarked on securely anchored wooden bridges.

The Contractor shall supply all materials required to establish the planimetric and altimetric benchmarks, such as stakes and field books, etc. The US Government Representative shall review the location of the axes, but this does not exonerate the Contractor from his responsibility for errors in locating or leveling any portion of the work. Prior to locating and laying out the work, the necessary datum or tie points, both horizontal and vertical, as well as the boundaries of the terrain to be occupied, shall be defined and approved.

The temporary BM and reference axes shall be placed at sites where they do not interfere with the execution of the work and that do not need to be moved, in order to allow their subsequent control at any point during the course of the work. No marks made with paint of any type, scratches, nails, centering, etc. shall be permitted on any current building or structure. Once the layout is complete, the Contractor shall submit a scheme for approval, including the location of existing structures and vegetation.

1.05) Demolishing and Removal of material

The Contractor shall demolish and remove the existing concrete slab section and the support granular material located in the area where the construction of the concrete footing shall take place (see drawing S001), in order to allow the construction of the foundation for the new mezzanine.

The Contractor shall be responsible for damages caused to any element on site while the demolition works are performed and the leftover materials are being withdrawn. The Contractor shall include in this item the demolition tools and transportation in trucks to authorized sites.

1.06) Excavation

The Contractor shall do the excavations needed to execute the works and shall be prepared to excavate in any type of material, using the appropriate methods, equipment and tools. Prior to the start of excavation, the Contractor shall have performed a study of all aerial, surface or underground interference, in order to not damage pipes, boxes, wiring, posts, hoses, wells or other elements or structures existing in the work area or adjacent to it. Should the excavation interfere with sewers or pipes, the Contractor shall build adequate support or protection for these installations.

The depth of the excavations and fills shall be executed according to the attached structural drawings. The excavated material shall not be stored in the top of the excavation. It will be lifted immediately to the trucks and transported to an authorized dump located outside the base if it is required.

The Contractor shall post signs (warning signals) and provisional fencing at all excavation sites. The fencing shall consist of three yellow plastic tape eight (8) centimeters wide and supported by temporary sleepers fastened securely to the ground, placed in order to avoid accidents. To prevent their obstruction or damage, the Contractor shall keep clear all drains, caps and catch pits in public utility networks near excavation sites.

The Contractor shall pay special attention to the shoring system they shall use, in order to guarantee that the existing concrete slab and other structures are not damaged during the excavation activities and that the existing terrain or backfilling next to the excavations do not fall down.

The Contractor shall be responsible for any over-excavation caused by a cave-in, deficiency of the material existing in the zone or other reasons, and shall fill at his cost the over-excavation with granular material previously approved until the excavation has the required dimensions.

The material removed from the excavation shall be removed as indicated in the general cleaning items. The Contractor shall be responsible for the conduction of surface water and the evacuation of underground water and any other type of water, as well as the supply and maintenance of drainage or pumping systems required to stabilize the slopes and avoid water getting into the excavations.

1.07) Compacting of the foundation level

The Contractor shall compact the bottom level of the foundation for the construction of the foundation and structural elements of the mezzanine structure.

The Contractor shall compact the bottom of the excavations in all the areas to build before initiating the filling activities, using mechanical and/or manual equipment. The selection of the compacting equipment shall be approved by the US Government Representative and the Contractor shall adjust to the plasticity characteristics of the material to be compacted.

If during the compaction process, the bearing layers show faults or bland zones, these shall be replaced on time with excavations and fillings by the Contractor at its own cost.

1.08) Filling in compacted granular material

The Contractor shall supply, install and compact the base in selected granular material that shall be the support for the new concrete slab according with the drawings of the project.

The Contractor shall also supply, install and compact the base in selected granular material mixed with cement in an 8:1 proportion that shall be the support for the foundation elements according to the drawings for the project.

The Contractor shall supply all the labor, materials, equipment and the execution of all the necessary works for the installation of the compacted filling material required by the project. The thickness of the fill shall vary according with the area of the foundation, for each of the works. Before initiating the filling works, the Contractor shall verify that the base material is totally clean of any vegetation, organic material and residual material from the construction and that the surfaces shall not have any inundation or zones with stagnant water.

The filling materials shall be obtained from sources authorized by current applicable environmental standards and by the Law, selected by the Contractor and approved by the US Government Representative. At least 7 days before initiating the filling materials works, the Contractor shall submit to the Embassy the information on the sources of materials and shall submit all the working permits, the representative samples and the results of laboratory tests. The supply of the samples and the laboratory tests by the Contractor shall not represent additional cost to the US Embassy.

The filling material shall be constituted of sandy granular material without organic lime, vegetal material, residues, waste or debris. The maximum size of the material shall not exceed five (5) centimeters. The fines content (percentage passing sieve No. 200) shall be inferior to 20% and the plasticity index of the material passing sieve # 40 shall be lower than 6%. The filling material shall be compacted in symmetric layers of ten (10) centimeters and 95% of the density shall be obtained with the compaction test of the Modified Proctor. The methods and equipment of compaction shall have the approval of the US Government Representative.

2.01) Foundation and Concrete Structures

2.01.01) Poor Concrete for Foundation

The Contractor shall perform the construction of concrete 2500 psi strength layer with a thickness of 5 cm along the area specified for the foundation. This layer shall be used so that the foundation keeps its volumetric properties and that the concrete for the foundation is totally clean of any vegetation, organic material and residual material from the excavation. This layer shall also be used as a clean area to assemble the reinforcement for the foundation elements specified in the structural drawings.

2.01.02) Concrete foundation

The Contractor shall supply the manual labor, materials and equipment, and the execution of all the works necessary for the construction of the foundation for the mezzanine structure which consists of concrete footing and pedestals and concrete tie beam. Before initiating the construction of the foundation, the Contractor shall verify that the construction site is free of vegetation and construction materials and that the surfaces do not have inundated zones or zones with stagnant water. The bases shall be leveled before pouring the concrete.

The Contractor shall build the foundation structures in accordance with the NSR-10 and the recommendations in the design. The concrete shall have a strength f'_c of minimum 4000 psi (280 kg/cm²), which shall be certified by the Contractor using test cylinders that he shall take following the applicable standards. The re-bar for the foundation shall be $F_y = 60,000$ psi (4,200 Kg/cm²) for $\varnothing > 1/2$ -inch and $F_y = 36,000$ psi (2,536 Kg/cm²) for $\varnothing < 1/2$ -inch. The Contractor shall follow the parameters of the design supplied by the US Government. The Contractor shall place the re-bar in elements which

guarantee a minimum separation of 4 cm of the reinforcement from the inferior external side of the concrete footing.

The Contractor shall supply the formwork, transportation and installation of the concrete for the footing and pedestal as well as for the concrete tie beams and sub-floor slab including the reinforcement steel specified on the structural design.

The Contractor shall include the execution of the corresponding laboratory tests as required. The Contractor shall take 6 sample cylinders for concrete resistance tests per pouring or per each 5 m³, in order to test 2 cylinders at 7 days, 2 cylinders at 28 days and leave 2 cylinders as proof samples. The results of the laboratory tests shall be given at the right time to the US Government Representative.

2.01.03) Concrete floor slab

The Contractor shall supply the manual labor, materials and equipment, and the execution of all the works necessary for the construction of the concrete floor slabs as shown on the attached structural drawings for the areas in which the existing concrete slab had to be removed in order to construct the concrete footing. Before initiating the construction of the concrete floor slabs, the Contractor shall verify that the construction site is free from construction materials and that the previous structural elements are completely finished and leveled. The Contractor shall apply an epoxy material along the walls of the existing concrete slab in order to guarantee the continuity of the structural element with the new slab to be built. The Contractor shall verify that the conditions on site are optimal before pouring the concrete. This item shall be executed in accordance with the characteristics of the concrete and reinforcement described in item 2.01.02.

3.01) Metallic Structure

The Contractor shall supply and install all the metallic elements in accordance with the drawings and the parameters of the design supplied by the US Government, including all the elements and accessories necessary for its fabrication, assembly and installation. The metallic elements refer to the metallic structure, stairs, accessories, and structural elements as described in the attached structural drawings. Before the construction of the metallic structures, the Contractor shall verify the design supplied by the US Government, the shop and construction drawings, and the description of all the fabrication and assembly system, characteristics of bolts and welding, steel qualities, painting, etc. If it is found that in the design some changes shall be done in order to fulfill the standards, this changes shall be taken into account in the proposal. This way when executing the project, this shall be done in total accordance with the current standards.

The main design standard is the NSR-10 title F. The fabrication and assembly shall fulfill chapter F.3.9 of the NSR-10 standard. The Contractor shall follow these minimum specifications for the structural elements:

- Anchoring Steel Plates ASTM A36 $F_y = 252$ Mpa.
- Anchoring Steel Bolts SAE Gr. 5 o ASTM A325X type 1.
- Screws SAE Gr. 5 o ASTM A352X type 1.
- Electrode E70XX o ER70S-X.
- Studs HEA ASTM A572 GR. 50 DE.
- $F_y = 352$ MPa $F_u = 457$ MPa.
- Tubular Studs ASTM A500 GR. C $F_y = 351$ MPa $F_u = 457$ MPa.
- Smooth rod, according with ICONTEC NTC-161 $F_y = 240$ MPa $F_u = 370$ MPa.
- Screws for metal straps SAE grade 2.

- Mechanical cleaning SSPC SP3.
- Vinyl Rust resistant e= 75 microns.
- Synthetic enamel finishing e= 75 microns.

Before beginning with the fabrication of the structural elements, the Contractor shall deliver the quality certificates of the elements in order to guarantee compliance of the specifications; otherwise the Contractor shall perform mechanical and chemical tests as described on the ASTM A370 and the A-6 designation of the ASTM.

The Contractor shall fabricate the metallic elements following the design supplied by the US Government, the shop and construction drawings as well as the actual edition of the AISC and the NSR-10, and shall verify the conditions on site to confirm details.

The Contractor shall take into account that the metallic columns shall be filled with a 3000 psi (210 kg/cm²) concrete as recommended by the designer.

The US Government Representative shall inspect the fabrication and assembly at the workshop before approving the material to be transported to the project site. Any defect or correction to the steel structure or the welding works detected during the inspection shall be corrected by the Contractor with no additional cost to the US Government.

A sample of all the metallic elements for the metallic structure shall be assembled in the workshop before being transported to the project site. These elements shall be chosen randomly and the adjustment of the parts shall be verified by the US Government Representative along with the Contractor Representative. Any defect or correction to the metallic elements detected during the inspection shall be corrected by the Contractor with no additional cost to the US Government.

For the metallic stairs and handrails the Contractor shall follow the structural drawings supplied by the US Government for the internal and external stairs described, making sure that each stair is supported by its specified metallic element. The Contractor shall fabricate and assemble the metallic steps in 1/8-inch hot roll material as specified in the attached structural drawings.

The Contractor shall perform the application of the protection coating and paint for the elements of the structure following the procedures described in the design supplied by the US Government. The metallic coating and protective paint shall comply with severe conditions. The Contractor shall supply and install a fire protection covering for the metallic structure as specified in the NSR-10 paragraph J.3.5.4, Sika Uniterm or similar. The Contractor shall follow all applications and safety recommendation of the manufacturer. These paintings shall be applied with a compressor for aggressive atmospheric conditions or as recommended by the manufacturer. Rust resistant protective cover paint shall also be applied.

The metallic structure shall have enough resistance to support the daily operations required by the Counter-Narcotics Police at Guaymaral. The construction of the mezzanine structure shall include the aligning for the correct verticality and leveling for the implementation of quality standards. All safety measures shall be considered for the installation.

After the metallic elements are assembled, the surface will be cleaned with tow cloth, in order to eliminate residues of grease, dust or humidity.

3.01.01) Steel deck-Concrete slab system

The Contractor shall supply and install the second floor slab consisting of a steel deck and a concrete slab integrated structure, following the quality standards that apply for the METALDECK system. The system is composed of 2-inch pre-molded steel sheets gauge 20. The Contractor shall support the METALDECK system along the metallic structure described in previous paragraph, as indicated on the attached structural drawings. The Contractor shall include as part of the system the connectors and supports for the rebar along the slab in order to allow the correct positioning of the reinforcement for the system and to improve the adherence between the concrete slab and the steel deck sheet.

The Contractor shall consider during the construction process the use of supports along the steel deck sheet in order to avoid potential deflections and undesirable irregularities. The Contractor shall remove these supports 7 day after the concrete placement.

The Contractor shall build the concrete slab in accordance with the NSR-10 and the recommendations in the design. The concrete shall have a strength f'_c of minimum 3000 psi (210 kg/cm²), which shall be certified by the Contractor using test cylinders that he shall take following the applicable standards. The reinforcement for the slab is a 5.5 m metallic mesh spaced 15 cm both ways, and shall be $F_y = 60,000$ psi (4,200 Kg/cm²) for $\varnothing > 1/2$ -inch and $F_y = 36,000$ psi (2,536 Kg/cm²) for $\varnothing < 1/2$ -inch. The Contractor shall follow the parameters of the design supplied by the US Government.

The Contractor shall take into account the control joints along the concrete slab at a minimum spacing of 300 cm. The Contractor shall fill all the joints with joint sealant material "Sika" or equivalent.

4.01) Floor and Wall finishes

4.01.01) Walls in Super board T= 12 cm.

The Contractor shall supply and install the external and internal walls in the first and second floor of the new facilities as shown on the attached architectural drawings, using Superboard system or equivalent. The Superboard system includes fiber cement panels along the two sides of wall supported by metallic studs, channels, bolts and accessories at a minimum thickness of 12 cm. The Contractor shall guarantee the appropriate anchoring of the fiber cement panel to the metallic structure following the recommendations of the manufacturer, and shall include the tape and sealant for the treatments of joints between the panels.

The Superboard system shall follow the recommendations in the NSR-10 and shall be resistant to water and exterior conditions.

The Contractor shall consider the heights of the walls shown on the attached architectural drawings and the ease of conducting electrical pipe inside the system.

The Contractor shall supply and install stucco along the Superboard walls following the recommendations of the manufacturer and shall verify that the stucco is completely smooth and free of imperfections before interior painting is done.

4.01.02) Painting of Internal walls

The Contractor shall supply and apply three (3) coats of white paint brand Viniltex type 1 pintuco reference 1501 or equivalent on the clean and finished surface of the interior Superboard walls. The Contractor shall apply the coats in different directions in order to achieve a high-quality finishing.

The Contractor shall include the painting of window and door interior bays, cutting edges, expansions joints, etc.

4.01.03) Painting of External Walls

The Contractor shall supply and apply three (3) coats of protective vinyl (Coraza type or equivalent) covering, white smoke color, on the clean and finished surface of the exterior walls of the facilities; the Contractor shall apply the coats in different directions in order to achieve a high-quality finishing. The Contractor shall apply this paint over the entire exterior surface of façade of the new facility and existing office exterior walls, at the heights indicated on architectural drawings.

4.01.04) Vinyl commercial floor 2 mm

The Contractor shall install a 0.30 x 0.30 m low commercial traffic vinyl floor finish 'VINISOL' type at least 2 mm thick, for the new offices, dressing room and small warehouse inside the new facility. The proposed color of the flooring shall be gray or as agreed with the CNP Representative on site.

The Contractor shall apply an insulating material and/or a leveled bonding material between floor and finished floor, in order to ensure stability and avoid the floor expanding or lifting as a result of changes in temperature. Skirting shall be done of PVC material, 7 cm height, gray color, installed according to manufacturer instructions without visible joints, installed in all areas. **Samples shall be submitted for approval before purchasing and installation.**

4.01.05) Troweled and hardened Floor

The Contractor shall supply and install a hardened material, Sika Chapdur or equivalent, along the fresh concrete of the first floor along the hangar area as a finishing for the concrete floor and in order to improve the physical and mechanical properties of the surface of the concrete in that area. The Contractor shall apply the hardened material along the fresh concrete following the recommendations of the manufacturer and shall use specialized equipment in order to give the required smooth finishing.

The Contractor shall also apply a curing material, Antisol or equivalent, after the finishing process has been completed. The Contractor shall fill all the joints with joint sealant material "Sika" or equivalent.

5.01) Metallic Carpentry

5.01.01) Metallic Windows

The Contractor shall supply and install windows with metallic sheet steel gauge 20, each one 2.00 m wide and 1.00 m high (includes frame and glass with 5 mm of thickness and 4 mm protecting film for the glass). The Contractor shall follow the design of the window as shown on the attached architectural drawings. The Contractor shall submit detailed plans including the type of lock for approval. The Contractor shall deliver the windows completely finished matching the existing conditions.

5.01.02) Metallic doors

The Contractor shall supply and install a door and doorframe made out of cold rolled steel sheet, gauge 18, panel type smooth on both sides, and 4 cm thicknesses as shown on the attached architectural drawings. The Contractor shall include the hardware for these doors consisting of a Schlage Orbit matte chromo lock for entrance, 4 hinges and a stop. The Contractor shall complete the application of two (2) coats of rust-resistant and weatherproof enamel, gray color or as agreed by the CNP. The door shall be

2.10 m height and 1.00 m in width and the door swing shall be according to the corresponding area as shown on the attached architectural drawings. The doorframe shall be mounted when the walls installation activities are being carried out. The Contractor shall include the installation of a subframe plate (3/8 inch x 6 inch) with Hilti HY 150 epoxy anchors or similar for the installation of the frame.

6.01) Electrical Installations

Electrical Standard Scope

Any electrical installation, which shall be done by the Contractor, shall comply with the following electrical standards: NTC 2050 last upgraded version included but not limited to chapters 1,2,3,4 and section 645, NEC 250 last version upgrade, NTC 3471/UL 67, EIA/TIA 607, EIA/TIA 568-569 last version upgraded, ANSI/IEEE C62.41-C62.45, NEPA 780, NTC 4552, IEEE-80, IEEE-77 and RETIE last version upgraded. The Contractor shall include in his proposal catalogs and technical sheets of materials, parts and elements to be used in the project. The awarded Contractor shall provide an Electrical/Electronics Engineer, who shall manage and control the execution of the electrical and communication work. The proposed Electrical/Electronics Engineer shall also sign the installation conformity and material conformity acts requested on RETIE. The Contractor shall include in his proposal the curriculum vitae of the proposed engineer.

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The required civil work for the underground raceway system shall include the costs for repairing the affected areas during the project execution (Sidewalks, pavements, green areas and concretes among others). The awarded Contractor shall comply with civil and electrical Colombian Constructions standards even if the affected areas do not.

The Contractor shall submit catalogs and technical spread sheets for all the materials to be used during the construction project. Lack and/or omission of such technical information shall render the proposal invalid and the proposal shall not be considered during the awarding process.

6.01.01) Main circuit branch

The Contractor shall provide a quote for supply and installation of a new electrical feeder, which shall connect the new Mezzanine. This new feeder shall connect the main panel board on Main Panel Board and the new electrical panel board, such as is located in plan E1. The estimated distance is 60 meters; however the contractor shall verify such measure during the pre-proposal site visit, adjusting it if necessary. The new main circuit branch shall be by a tetra-pole system THHN/THWN AWG 4X No.6+ TX No8. The Contractor shall quote for supply and installation of a set of industrial three-pole breakers, thermo-magnetic trigger with a current protection capacity of 3X30A to be installed on each of the electrical panel boards. The new set of breakers shall be brand new and manufactured by a well known vendor, such as Merlin Gerin, ABB, Siemens or equivalent. In all cases the units to be provided shall be RETIE-certified. The main circuit branch shall be labeled according to the existing maintenance schema.

6.01.02) Metallic piping

The Contractor shall provide a quote for supply and installation of a piping system, which shall be made up of a single metallic pipe, EMT type and gauge of 1 inch. The Contractor shall also include in his offer the elements, parts and accessories required to install the pipe according to NTC 2050. This work includes metallic boxes and an isolated grounding accordingly. The new piping system shall be placed

along the ceiling (suspended). The new piping system shall be labeled every 1.5 meter (marking labels shall be defined during project execution). The total length of the proposed system is 60 meters; however the Contractor shall verify such measure during the pre-proposal site visit, adjusting it if necessary.

6.01.03) New Distribution Panel board

The Contractor shall quote for supply and installation of a new electrical circuit board, which allows the electrical distribution for the proposed services on the new facilities. The new panel boards shall have space for the main breaker (as requested before, 3X30A), barrages for phases, neutral and ground (copper). The phases' barrages shall be protected by an acrylic sheet or any other RETIE-certified mechanism such as a "Dead front", in order to avoid direct manipulation. The new panel board units to be supplied and installed shall be made of metal and they shall comply with Colombian standard NTC 3475 or US standard UL67. The new panel board units shall have a current capacity up to 400A (See capacity accordingly in NTC 3475, table 11.2), voltage isolation rate 600VAC and interruptive current capacity up to 50KA.

The awarded Contractor shall supply and install the new main breaker and the secondary circuit protections. The proposed Distribution Panel Board shall have a capacity of 42 circuits and the second one shall have capacity of 36 circuits. The power capacity list for the new breakers is available in the annex "Electrical calculations.pdf". The circuit breakers to be used during the project shall be brand new, RETIE-certified and manufactured by a well known international company such as ABB, Siemens or Merling Gerin.

The new distribution panel board unit to be supplied and installed shall have an independent TVSS class B device, which shall comply with US standard ANSI/IEEE C62.41-C62.45, interruption capacity up to 120KA, protection modes L-L-L-N, L-G, reject filtering rated > -30dB, led indicator of status, operational voltage 208VAC/120VAC, response time < 100nSeg and support to three pole system. The unit shall be installed internally or externally. The Contractor shall annex in his proposal the NEMA LS-1 format, specifying the equipment's technical sheet to be supplied and installed. The new Distribution Panel Boards shall have frontal door, lock and external signaling according to RETIE.

The new Distribution Panel Boards shall be made of CR BWG No 16-18 and shall be painted with special treatment, in order to support current conditions such as oxidation. The interior spaces shall comply with the US standard IEEE-142. The Colombian standard NTC 2050 and RETIE shall be observed during installation and hardware deployment.

6.01.04) Junction boxes for secondary circuit panel boards

The Contractor shall quote for supply and installation of metallic junction boxes, which shall be placed according to distribution presented on attached plans. The new junction boxes shall be made of metal with dimensions of 10cmX10cmX10cm.

6.01.05) Secondary circuit- Electrical wiring

The Contractor shall quote for supply and installation of the new cabling system for each of the new circuits on the new facilities. The expected wiring shall be type THHN/THWN AWG 3XNo.12. The information regarding wire's caliber is attached in the annexed document "Electrical calculations.pdf".

6.01.06) Secondary circuit- raceway and ducts

The Contractor shall quote for supply and installation of a metallic raceway, which shall be placed along the wall. The raceway system shall be made up of a metallic raceway, metallic piping and by a segment of a metallic ladder (see item “Distribution raceway backbone from communication system to new communication rack” for more details).

The new metallic raceway shall have a metallic splitter, providing two cavities, one for electrical wiring and the other one for data wiring. The new raceway to be installed and supplied shall be electrostatic painting type, 15cm x 5cm, with special treatment to prevent corrosion (due to local environmental conditions).

The metallic piping shall be made up of EMT pipes unless excepted in the plans, in which case the piping gauge will be ¾ inches. The new system shall run on ceiling and/or walls, suspended or fixed along or embedded, such as shown in annexed plans. EMT accessories and installation devices such as anchors are subject to be included in the proposal.

6.01.07) Single-phase isolated grounding pin receptacle

The Contractor shall quote for supply and installation of single-phase receptacles duplex type, 120VAC/20A, NEMA 5-15R, orange color, hospital grade, isolated grounding pin, which shall be distributed according to plans. Distribution shall be done along the new raceway and ducts. The new receptacles shall be marked according to NAS-COR instructions. The new receptacles shall be certified by RETIE and of well known brands such as Legrand or Leviton. See plan E-1 and E-2 for location details.

6.01.08) Fluorescent lamps 2X32, T5

The Contractor shall quote for supply and installation of fluorescent lamps 2X32, T5. The Contractor should submit samples to COR before installation is done. The lamps shall be placed such as shown in plans E-3 and E-4. The new lamps shall include the electrical access service point (tube type EMT ¾”, cabling and light switch toggle type) appliances, and accessories for correct installation. The new lamps shall have a light switch, which shall be installed 120cm from finished floor. For safety reasons, each lamp shall be tied to a metallic cordin order to prevent the unit from falling down from from the ceiling. The number of lamps per light switch is also presented in annexed plans. The Contractor shall include in his/her offer the materials and labor required to install each unit, including the electric plug, single receptacle, piping, cabling and light switch toggle type.

6.01.09) Grounding system

The Contractor shall ground the new panel boards from the grounding bar located in the General Panel Board. The grounding lines shall be type THHN/THWN AWG No. 8 (See item “Secondary circuit branches”). Ground lines connected from the new distribution panel boards shall be installed in a radial way, avoiding looping. The awarded Contractor shall observe the standard NTC 2050 and RETIE. The awarded Contractor shall guarantee the absence of parasite current flows (60Hz) in the grounding lines. If this this phenomenon happens, the awarded Contractor shall adopt the countermeasures to correct and prevent the situation (this shall be included in the proposal). The grounding work includes the communication closet and the raceway system (raceway and pipes). The Contractor shall include in his proposal grounding kits for the metallic junction boxes. EMT installation shall be grounded by using an isolated feeder THHN/THNW AWG No. 10.

6.01.10) UPS 3 KVA

The Contractor shall quote for supply and installation of a UPS 3KVA, true online system, double conversion, single-phase, 120 VAC, which shall have LAN port for management purposes (it shall have NIC). The new UPS shall be placed in the new communication closet, with batteries for 30 minutes under full power load. The unit shall be new brand, APC or Powerware, time since manufacture shall not be longer than six months.

6.02) Data Network

6.02.01) Data drops

The Contractor shall provide a quote for supply and installation of duplex data drop, ANSI/TIA/EIA-568-B.2-10 CAT 6A, which shall be certified according to stated standard. The data drops are located as shown in plans E-1 and E-2. Each data access point shall have jack connector, wiring, faceplate and marking icon, marking rings to identify both ends of the data drop. The contractor shall quote for supply fifty seven-foot patch cords (for work place) and fifty five-foot patch cords (Telecommunication closet administration).

The Contractor shall quote well known manufacturers such as AMP, Siemon or Panduit. The wiring certification shall be done by using a cabling network analyzer, which shall have a calibration certificate issued within six months; this is **MANDATORY** for system acceptance. The data drops shall be installed into the raceway that runs over the level of the baseboard.

The Contractor shall quote for supply and installation two patch panels, CAT 6A certified. The new units shall be labeled according to instruction by the COR during the contract execution.

6.02.02) Distribution raceway backbone from communication room to new communication rack

The Contractor shall quote for supply and installation a metallic ladder tray 15cm, plenum type, BWG N0. 14-16, MECANO or similar REITE-certified brand. The metallic ladder's location shall run from existing cabling center (40 meter from the area to be modified). The new metallic raceway shall be grounded by using an isolated copper wire caliber AWG No.8; this cable (Grounding Line) shall be tied down into the secondary grounding bus bar.

The grounding line shall be screwed every meter along the raceway, complying with electrical standard EIA/TIA 607. The raceway shall be duct type and shall comply with Colombian standard NTC 2050 article 318. The raceway shall be installed along the ceiling (suspended).

The new metallic ladder tray shall be used for carrying in the Fiber Optic link, which shall connect the communication room and the new communication rack to be supplied and installed by the awarded Contractor

6.02.03) Telecommunication closet (TC)

The Contractor shall quote for supply and installation a telecommunication closet of 42 inches height. The new TC shall be metallic, painted with electrostatic painting, built in cold rolled caliber BWG No. 16. The new TC shall have door with lock and ventilation mesh as well as two fans on top. The TC shall have a grounding barrage; taking into account that TC's grounding bar is connected with master barrage by using an insulated conductor THHN/THWN AWG No. 8 and connecting both metallic raceways by using an insulated conductor THH/THWN AWG No. 10. The TC shall have a power strip, which shall

have the following features: TVSS class A, current interruption of 12KA, EMI/RFI filter, 5 duplex outputs 120VAC/15A, manufactured by well know vendor and RETIE certified.

The TC shall be divided in two parts: the first one shall be used for data purposes and it shall have two patch panels 24 UTP, horizontal and vertical wiring organizers and the data switches internetworking device; and the second section shall contain the UPS and battery set.



6.02.04) Internetworking device

The Contractor shall quote for supply and installation of two data switch units with the following features: 24 UTP port (10/100/1000 Mbps), power over EthernetX24 port, Fiber optics ports 1000BaseFx including cards and patch cords MT-RJ, layer 2/3, manageable via Web. The suggested brand is Cisco Catalyst series. The system configuration is done under NAS-COR instructions.

6.02.05) Fiber Optic

The Contractor shall provide a quote for supply and installation of one (1) fiber optics data link, which runs from the existing communication rack located on the second floor (Communication room, Hangar II) to the new communication closet located in the Mezzanine, such as shown in plan E-1. The data link's length is 50 meters approximately; however the Contractor shall review and adjust the value during on site pre-proposal conference. The FO shall be multi-mode type, six fibers, armored, 850nm laser-optimized with a core/cladding size of 50/125microns, certified for ANSI/TIA/EIA 568-B.2-1 CAT 6E. The maximum attenuation per connector per line shall be: 850 nanometers: 3.5dB/km and 1300 nanometers: 1.5dB/km.

The nominal connector loss using either termination method will not be greater than 0.30 dB per mated pair. The Contractor shall quote for supply and installation of two FO shelves which shall be placed in the communication racks mentioned above, one for the communication closet in the Communication room and the second one on the new communication closet. The shelves shall receive the fiber optic line from both ends. The shelves shall have capacity for three pairs (six fibers). The shelves shall be metallic and shall have support for sliding mounting on 19 inches racks.

The shelves shall have LC or SC terminations. The fiber optics shall be bonded by crimping or epoxy, the insertion loss per connector shall not be more than 0.7dB. The testing certification results shall comply with EIA/TIA 568B 3. The Contractor shall include in his proposal the necessary testing equipment and qualified technician in order to achieve testing and certification process. The Contractor shall include cabling analyzer brand and model to be used during testing process, as well as the certificate of calibration, which should be dated within the last 12 months. The Contractor shall leave a FO extension (loop) of 2 meters for maintenance purposes, which shall be present on each termination (Communication rack) of the FO link.

6.03) Marking

The electrical works shall be marked by means by labels, and directories and electrical plans shall be placed on site. The vendor shall provide a fire extinguisher according with NFPA regulations, type ABC, including signaling icon and wall marks. Once the vendor finishes the works, he shall provide as-built plans including electrical diagrams, wiring gauges, pathways. Technical information from each installed device shall be included.

6.03.01) Warranties

The Contractor shall quote the preventive maintenance service on-site during the warranty time (one year), which shall include three preventive maintenances to the AC system.

6.03.02) Grounding lines' labeling

The grounding lines running from the main distribution panel board shall be marked. These marks shall be done in solid plastic, 5cmX3cm, fonts colored in red and background colored in yellow.

6.03.03) Panel board labeling

The main distribution panel board, the breaker on the substation's main panel board, the new distribution panel board for each module (building) and their breakers shall be marked. All marks shall be done in solid plastic, fonts colored in white and background colored in black. The following dimensions are expected:

10cmX5cm, for the main distribution panel board
5cmX3cm, for each distribution panel board
5cmX3cm, breaker on the substation; main panel board

All panel boards shall have their own single diagram, load diagram and all circuits shall be labeled.

6.03.04) Junction boxes labeling

The new junction boxes shall be marked by using a metallic mark, size 3cmX4cm and low relief.

6.03.05) Metallic enclosures

All metallic enclosures shall be labeled by using solid plastic marks, fonts colored in white and background colored in black. The Contractor shall also use safety signaling for the panel boards' doors.

6.03.06) Marking codes

The texts and fonts to be used in the project shall be submitted by the awarded Contractor in order to get the COR-NAS's approval.

6.03.07) Main circuit branch cabling

The wiring to be used for phases shall be labeled by color tapes in yellow, blue and red. Neutral will be colored in white and grounding in green. The main circuit branch shall be labeled by using solid plastic marks, size 10cmX5cm, fonts in white and background in black. The font size is selected on site. The new labels shall be placed on the new junction boxes.

6.03.08) Secondary branch cabling

For cabling gauge bigger than (AWG No4, 2, 1/0, etc) or equal to AWG No. 6, the Contractor shall observe the same protocol depicted in the previous item. For cabling gauge such as AWB No. 8, 10 and 12, the Contractor shall use colored cabling in red, yellow and blue for each phase (not repeating each others) neutral in white and ground in green. The secondary circuits shall have plastic moorings, holding the cabling every 1.5 meters. The secondary branches shall be labeled by solid plastic marks, size 10cmX5cm, fonts in white and background in black. The font size is selected on site. The new labels shall be placed on the new junction boxes.

6.03.09) Indoor buildings cabling

The Contractor shall use colored cabling in red, yellow and blue for each phase (not repeating each others), neutral in white and ground in green. The Contractor shall install solid plastic marks on faceplates. The marks shall have the following dimensions 3cmX1cm, fonts colored in white and background colored in black.

7.01) Other Requirements:

7.01.01) List of Personnel: Prior to initiation of the work, a list of personnel to be employed at the site shall be submitted for review to be able to obtain access to work area. The information required includes full name, identification card number, place and date of birth, home address and, in some cases, a valid government certificate of good conduct and photographs. The US Government and the Base shall reserve the right to admit or withdraw personnel from the work site for reasons of security and/or due to the quality of the work.

7.01.02) Vehicles and Machinery: All vehicles and machinery or equipment that would schedule to enter the work area shall be itemized on a list submitted well enough in advance to be verified and to obtain an entry permit. This list shall include type of vehicle, plates, complete name and ID number and place of issue of the driver. The Contractor shall take into account the time used by vehicles and personnel in order to enter and exit the work area.

7.01.03) Industrial Safety Person: The Contractor shall have permanently on site a person specialized in industrial security who will be dedicated to ensure that the workers are constantly complying with the security standards of personnel and equipment, scaffolds and other installations or structures.

7.01.04) Apparel: All personnel shall be equipped with an overall of the same design and color, or long pants and T-shirt with sleeves of the same type and color, boots, hardhats, gloves and any security elements required for their particular activity, such as face masks or shields, gloves, boots, ear plugs, etc. Use of these items at the work site is mandatory. Likewise, each employee shall wear a laminated recent

photo identity card indicating his/her name and identification card number, position, and Contractor name.

7.01.05) Cleaning and Debris Removal: The Contractor shall have personnel cleaning the construction site and nearby zones daily. The unit prices for all items, without exception, include the costs of cleaning up, loading and removal of all materials resulting from the building work. The Contractor will take these materials to an authorized dump, where the interests of the base, third parties and the environment will not be affected (the Contractor shall follow the parameters established in Resolution 541/94 and subsequent modifications). Material from excavations shall be deposited in such a way as to avoid blocking the entrance to the site at all times or occupying public roads while the material is being loaded into trucks for removal.

7.01.06) Materials and Finishes: The Contractor shall include new materials of first quality design for prolonged and heavy duty use. The Contractor shall ensure good materials and excellent finishes. All the colors and finishes shall be submitted to the US Government Representative for approval prior to purchase and installation.

The Contractor shall leave on site a stock of materials like bulbs, fuses, terminals or pipes that have been fitted, representing three (3) % of the total quantity, for future maintenance purposes. These items shall be handed over duly packed, identified and listed.

7.01.07) Food, Transportation and Lodging: The Contractor is responsible for food, transportation and lodging for personnel off Base.

7.01.08) Information of Important Events: The Contractor shall inform the Contracting Officer's Representative of special events or works, such as the pouring of concrete, tests and the like, giving the Contracting Officer's Representative at least seventy-two (72) hours notice so he/she can be physically present.

7.01.09) Site Description: Before beginning preliminary works, the Contractor shall complete a site description with photographs and an account of the actual conditions of roads, sidewalks, surrounding buildings, etc.. This report shall be signed by the commander and Contractor. This report is for the purpose of documenting the actual status of the area before the work is performed. This report will be used to compare the site after the work is finished. Three identical copies must be furnished: one for the user (Colombian National Police), one for the Contractor, and the final one for the US Government. If the Contractor caused any damage to the work site or other private or public property, he/she shall do all the repairs prior to the contract closeout; these repairs are without cost to the US Government. At the end of the project, a closing review and memorandum should be done with the participants, with a signed copy furnished in the final report.

7.01.10) Inventory of Removed Elements: The Contractor shall dismantle, list, and submit the reusable elements of the work site to the final user (Colombian National Police). A signed copy of this list shall be given to the user and the Contracting Officer's Representative.

7.01.11) Protection of Elements in the Work Area: Areas, equipment, and elements at the work site or in areas nearby shall be protected from damage or deterioration. The Contractor shall assume the cost of any repair or replacement required because of improper use or carelessness on his part or on the part of his workers.

7.01.12) Security of the Construction Site: The Contractor shall supply security for the construction site and the camps. The US Government and the final user will not be responsible for the payment of the security services nor for the elements left at the construction site.

7.01.13) Nearby Zones: The nearby zones must be left in the same or better conditions as found prior to construction (with grass, gravel, sidewalk, floor finishes, etc as applicable). Furthermore, repairs shall be done to faults, scratches, damage and anything else which the Contractor and the US Government might note in the building and neighboring constructions for ensuring that the work is made ready and handed over correctly. The Contractor shall dismantle and remove all preliminary facilities, camps, sites, etc. before the final handover, eliminating all debris and extra materials.

7.01.14) Underground Interferences Study: The Contractor shall have on hand a study of all aerial, surface, underground or engaged interferences provided by the CNP, so as not to damage pipes, boxes, wiring, posts, hoses, wells or other elements or structures existing in the work area or adjacent to it. Should the excavation interfere with sewers or pipes, the Contractor shall build adequate support or protection for these installations and/or develop a new route, subject to prior approval by the US Government Representative. The Contractor shall keep all drains, caps and catch pits clear in public utility networks near excavation sites to prevent their obstruction or damage.

"FIRM AND PROJECT INFORMATION "

Firm Information		NIT NUMBER:	
NAME	ADDRESS	TELEPHONE/FAX	E-MAIL ADDRESS

Owners, Partners and Principal Officer

NAME	POSITION	TELEPHONE	ENGLISH COMMUNICATION (Ability to understand, write and read)

Legal Representatives and backups

NAME	POSITION	TELEPHONE	ENGLISH COMMUNICATION (Ability to understand, write and read)

Project Director, Superintendent and key technical Personnel for this project

NAME	POSITION	TELEPHONE	ENGLISH COMMUNICATION (Ability to understand, write and read)

Subcontractors for this project (if it does not apply indicate it in the chart)

NAME	ACTIVITY TO PERFORM	% DEL PROJECT TOTAL	TELEPHONE	ADDRESS AND CITY

Suppliers for this project

NAME	MATERIALS TO SUPPLY	% DEL PROJECT TOTAL	TELEPHONE	ADDRESS AND CITY

Requirements of the Offeror and Owners/partners:

DESCRIPTION	YES	NO	NOTES
Has all licenses and permits required by local law to perform?(Chamber of Commerce, Merchandise Register, Professional Licenses, etc.)			
Meets local insurance requirements (Prestaciones Sociales, ICA, Sena, etc.)			
Has the ability to obtain a performance and guarantee bond and payment bond, or adequate performance security, such as irrevocable letters of credit or guarantees issued by a reputable financial institution. Include Information			
Has adverse criminal record?			
Has political or business affiliation which could be considered contrary to the interests of the United States.			

I certify that the information is accurate and verifiable

Signature of the Legal Representative _____ Date _____
 Name of the Legal Representative _____ Id Number _____

Artículo 289 del Código Penal Colombiano: "El que falsifique documento privado que pueda servir de prueba, incurrirá, si lo usa, en prisión de uno (1) a seis (6) años."

"FIRM EXPERIENCE"

Indicate the experience of the firm in similar projects performed in the last ten (10) years. Include maximum 10 projects. **Do not include certifications or contract copies.** In the case we needed we will require it afterwards.

	1	2	3	4	5
NAME OF THE CLIENT (CONTRACTING PARTY)					
CLIENT ADDRESS					
CLIENT TELEPHONE NUMBER					
CLIENT POINT OF CONTACT					
CONTRACT NUMBER					
TYPE OF CONTRACT (* 1)					
NAME OF THE CONTRACT OR PROJECT					
PROJECT LOCATION					
PROJECT STARTING DATE					
PROJECT FINISH DATE					
WAS THE PROJECT FINISHED ON TIME (Explain if needed)					
SQUARE METERS OR UNITS (Indicate unit measurements)					
CONTRACT COST IN PESOS					
CONTRACT COST IN MONTHLY MINIMUM SALARIES					
INDICATE IF IN THIS PROJECT YOU WERE THE PRIME CONTRACTOR , SUBCONTRACTOR OR ASSOCIATE					
INDICATE THE PERCENTAGE OF PARTICIPATION OF YOUR FIRM IN THIS PROJECT					
BRIEF DESCRIPTION OF ACTIVITIES BEING PERFORMED					
COMPARISON OF THE WORK PERFORMED WITH THIS SOLICITATION (* 2)					
BRIEF DESCRIPTION OF TECHNICAL PROBLEMS ENCOUNTERED AND THE WAY THEY WERE SOLVED					
METHOD OF ACQUISITION (Public solicitation, private or non competed) award criteria					
COST/PRICE MANAGEMENT HISTORY (any cost overruns and under runs, and cost growth and changes)					
HAVE YOU HAD ANY CONTRACT TERMINATIONS IN THE LAST TEN (10) YEARS?					
REASONS FOR TERMINATIONS (for contractor convenience ó for default or other)					

(*1) Consulting, construction, design, work oversight, delegated administration If you are not a company explain if you were the superintendent, director or other.

(*2) En here you should indicate which activities performed are similar to the work being contracted.

I certify that the information is accurate and verifiable

Signature of the Legal Representative

Name of the Legal Representative

Date

Id Number

Artículo 289 del Código Penal Colombiano: "El que falsifique documento privado que pueda servir de prueba, incurrirá, si lo usa, en prisión de uno (1) a seis (6) años."